

Comments from Dudley Giberson on this web project:

The project in question is posted on an "open to the public" page which appeals to individuals who want to build a kiln to melt metals and fire ceramics who have no previous experience with this technology. It is radical in that it is totally inexpensive and requires no expertise of any sort to put this together. Many of you who know something of my career realize that my heart is in this 110 percent- as a ten year old boy I would melt aluminum in the house coal-fired furnace. I get this. So please read on:

<http://www.instructables.com/id/Homemade-Electric-Kiln/>



To begin with I must say that I had nothing to do with this design shown above. It was out of the blue that I began to receive requests for elements for this item. To date, (November of 2015) I have made maybe 20 elements for this project, and because there is continued interest it has been enough to make me want to put up this page to explain a few things that should be corrected.

For the most part I have recommended using the E120-10-184 (1200 watts). Of course I am always curious how things work out and one customer wrote back:

It's worked very well actually. I've had it up to 1850 degrees and it wasn't maxed out. I did wire my kiln according to the diagram you sent and was a big improvement over the original design. This has been a popular project so hopefully you will make some money off of it! I appreciate your earnestness and help.

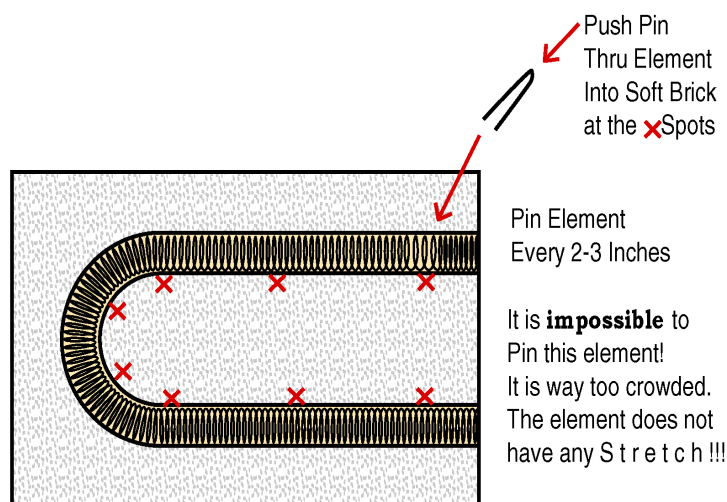
The website "instructables" suggests the element be made in 16 gauge wire which is the E120-14-164, shorthand for 120 volts, 14 amps, 16 gauge wire wound on

the #4 arbor (1/4 inch ID). The closed coil section will be about 16.5 inches long with about 317 loops or coils and with an element groove in this project of 29.5" it makes a crowded poorly stretched installation where there are around 11 coils per inch in the finished install. This would be what I call a bad installation because the heat can not easily get out of the element without overly heating itself. Longevity does not seem to be part of the goal of this project. However, the facts are this element can be crammed into the groove and it costs \$25.00.

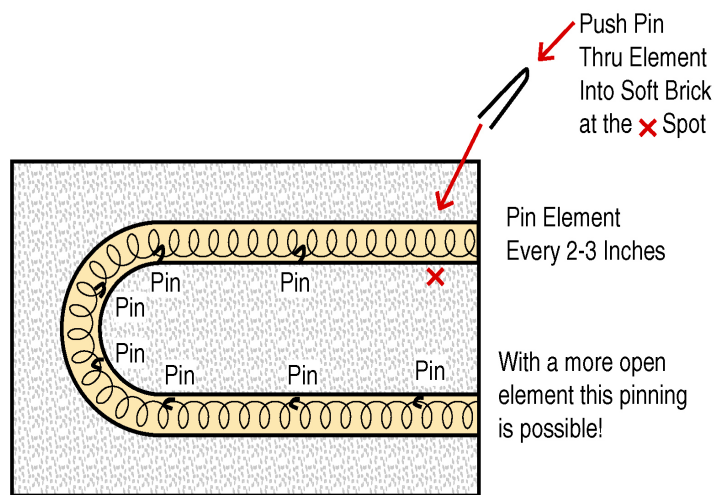
But I offer more than a word of caution: This element puts out 1680 watts and it is stuffed into a space of 0.07 cubic feet. For a small kiln of this sort needing to achieve 2000 deg. F. I often will recommend maybe 3000 watts per cubic foot. With this fact in mind the present element (the E120-14-164) is about 8 times more powerful than what would be required. What this really means is this element could easily overheat the interior of the kiln if you were to experience a "full-on" event (caused by a broken SSR or Relay or even a controller malfunction).

There is another aspect to this problem: Elements of this sort use wire pins to hold them in place. The long-legged "u" shaped pins are hooked around one of the coil loops and pushed into the soft brick to keep the element held snugly in the groove. Without using this pinning technique the element will shortly be on the floor of the kiln in a pile having an electronic sparkfest/meltdown.

Here are some images to illustrate this idea. The image to the right illustrates the coil density of the E120-14-164. This element puts out 1680 watts which is a lot more power than is necessary for this small sized kiln. But it will make the kiln fly.



Here the element is made of finer wire, like 20 gauge, which allows some space for the pinning. This element is the E120-8-205 (\$25.00) 960 watts. This element can at least be installed correctly using the pinning technique. There are approximately 7 loops to the inch with the final install.



Element Choices / Comments

Element Name	Watts	Cost	Comments
E120-10-184	1200 watts	30.00	I have recommended this to several people. This element has plenty of power and it will fit (sorta). I still think it is overkill.
E120-14-164	1680 watts	25.00	This is definitely overkill, but the element is not very expensive and it can be stuffed into the groove. It makes for a fast heat-up.
E120-8-205	960 watts	25.00	This is a best choice. There is some space to pin the element properly. Keep in mind none of these is a perfect choice. Maybe if the groove was doubled in length we could put a heavier duty element in here, but everything is going to be a tight fit.

[Important Comments on the Electrical Connections](#)

